

AMENDMENTS TO THE CLAIMS:

This listing of the pending claims will replace all prior versions and listings of claims in this application:

1. (Currently Amended) In a method for conducting a chemical reaction in the presence of a catalyst, the improvement comprising:

providing said ~~the~~ catalyst on a support that is thermally and electrically conductive, wherein said support is selected from the group consisting of conductive graphite, carbon nanotubes, activated carbon granules, and carbonaceous adsorbents; and

supplying an electric current to said ~~the~~ catalyst on said ~~the~~ support such that a ~~the~~ temperature of said ~~the~~ catalyst increases.

2. (Canceled).

3. (Currently Amended) The method of claim 1 ~~2~~ wherein said ~~the~~ support is doped with a metal oxide.

4. (Currently Amended) The method ~~support~~ of claim 3 wherein said ~~the~~ support is carbon fiber.

5. (Currently Amended) The method of claim 1 wherein said ~~the~~ catalyst is selected from the group consisting of ~~as~~ Pt, Pd, Ru, Ni, In, P, TiO₂, V₂O₅, MoO₂, WO₃, ZnO, SnO₂, CuO, Cu₂O, FeO, Fe₂O₃, and mixtures thereof ~~etc.~~

6. (Currently Amended) The method of claim 5 wherein said ~~the~~ catalyst is present in admixture with a carrier.

7. (Currently Amended) The method of claim 6 wherein said ~~the~~ carrier is selected from the group consisting of graphite powder, graphite or activated carbon powder, Al₂O₃, SiO₂, TiO₂, MgO, ZrO₂ and mixtures thereof.

8. (Currently Amended) The method of claim 6 wherein said ~~the~~ carrier is sintered and has pores from about 1 to about 100 Angstroms ~~Angstrom~~ in diameter.
9. (Currently Amended) The method of claim 8 wherein said ~~the~~ carrier has a surface area of about 1 to ~~1,000~~m²/g about 1000 m²/g.
10. (Currently Amended) The method of claim 1 wherein said ~~the~~ catalyst on said ~~the~~ support is in the form of a particle and said ~~the~~ chemical reaction is conducted in the presence of a bed of contacting particles.
11. (Currently Amended) The method of claim 10 wherein said ~~the~~ bed of particles is captured between a pair of electrodes.
12. (Currently Amended) The method of claim 1 wherein said ~~the~~ support is a conductive carbonaceous material having a pore diameter ~~porosity~~ of about 0.005 to about 0.2 micrometers.
13. (Currently Amended) The method of claim 12 wherein said ~~the~~ support possesses a heat conductivity of about 0.8 watt/cm-K to about 23 watt/cm-K.
14. (Currently Amended) The method of claim 13 wherein said ~~the~~ support exhibits an electrical resistivity ~~resistance~~ of about 1 to about 100 Ohms-cm ~~ohm/square~~.
15. (Currently Amended) The method ~~support~~ of claim 14 wherein said ~~the~~ support exhibits a dielectric constant of about 5 to 6 at about 10³ Hertz ~~Hz~~.
16. (Currently Amended) The method of claim 1 wherein said ~~the~~ catalyst is present on said ~~the~~ support in an amount of about 1 μ g/cm³ to about 10 g/cm³ ~~one microgram to 10 grams/cm²~~.
17. (Currently Amended) The method of claim 1 wherein said ~~the~~ support is a woven or non-woven carbon fiber cloth or felt.

18. (Currently Amended) The method of claim 17 wherein said ~~the~~ carbon fiber cloth or felt is folded or rolled and said ~~the~~ reaction is carried out by passing chemical reactants between said ~~the~~ folds or rolls in said ~~the~~ cloth or felt ~~cloth/felt~~.

19. (Currently Amended) The method of claim 1 wherein said ~~the~~ support is a polymeric adsorbent.

20. (Currently Amended) The method of claim 19 wherein said ~~the~~ polymeric adsorbent is an ion exchange resin.

21. (Currently Amended) The method of claim 20 wherein said ~~the~~ ion exchange resin is a bead.

22. (Currently Amended) The method of claim 1 wherein said ~~the~~ catalyst includes at least one of ~~contains~~ copper, zinc and aluminum.

23. (Currently Amended) The method of claim 1 wherein said ~~the~~ electric current that is passed through said ~~the~~ catalyst increases the temperature of said ~~the~~ catalyst about 50 to about 1200 degrees C.

24. (Currently Amended) The method of claim 1 wherein said ~~the~~ chemical reaction is a methanol steam reforming reaction.

25. (Currently Amended) The method of claim 1 wherein said ~~the~~ support is a non-woven carbon fiber plug.

26. (Currently Amended) The method of claim 1 wherein a plurality of contacting non-woven carbon fiber plugs carrying said ~~the~~ catalyst are interposed between a pair of electrodes.

27. (Canceled).

28. (Canceled).

29. (Currently Amended) A method for supporting a catalyst comprising:

providing a thermally and electrically conductive support, wherein said support is selected from the group consisting of conductive graphite, carbon nanotubes, activated carbon granules, and carbonaceous adsorbents ~~the conductive support is thermally and electrically~~ conductive;

~~providing a support, wherein said support comprises the conductive support, thereby forming a conductive support;~~

providing a catalyst; and

dispersing said catalyst in or on said ~~the conductive support, thereby supporting said catalyst.~~

30. (Currently Amended) A method for supplying energy to a catalyst comprising:

providing a thermally and electrically conductive support, wherein said support is selected from the group consisting of conductive graphite, carbon nanotubes, activated carbon granules, and carbonaceous adsorbents; ~~the conductive support carbon and/or any suitable thermally and electrically conductive substance, and wherein the conductive support is thermally and electrically~~ conductive;

~~providing a support, wherein said support comprises the conductive support, thereby forming a conductive support;~~

providing a catalyst; and

dispersing said catalyst in or on said ~~the~~ conductive support; and

providing energy to said conductive support, whereby said energy activates said conductive support thereby providing said catalyst with energy at the local level, wherein said energy provided at the local level is sufficient to activate said catalyst.

31. (Currently Amended) In a method for conducting a chemical reaction in the presence of a catalyst, the improvement comprising:

providing said ~~the~~ catalyst on a support that heats when placed in a microwave field, said ~~support being selected from the group consisting of conductive graphite, carbon nanotubes, activated carbon granules, and carbonaceous adsorbents;~~ and

exposing said ~~the~~ support to a microwave field to cause a ~~the~~ temperature of said ~~the~~ catalyst to increase.